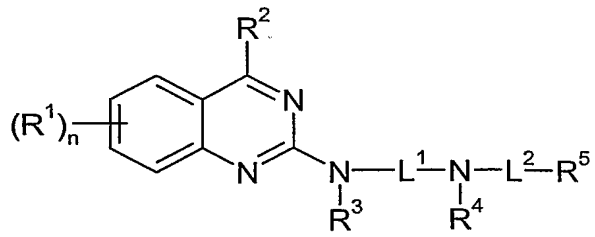
Claims

1. A compound of formula I



I

wherein R^1 represents a) a C_{1-4} alkoxy group optionally substituted by one or more fluoro, b) a C_{1-4} alkyl group optionally substituted by one or more fluoro, c) halo, d) cyano, e) a group NR^aR^b in which R^a and R^b independently represent H or a C_{1-4}alkyl group or R^a and R^b together with the nitrogen atom to which they are attached represent a saturated 3 to 7 membered heterocyclic ring optionally including an O atom f) a group $CONR^cR^d$ in which R^c and R^d independently represent H or a C_{1-4}alkyl group or R^c and R^d together with the nitrogen atom to which they are attached represent a saturated 3 to 7 membered heterocyclic ring, or g) a group $-OSO_2C_{1-4}$alkyl optionally substituted by one or more fluoro;

n represents 0, 1, 2 or 3 ;

R^2 represents H or cyano or a C_{1-4}alkyl group optionally substituted by one or more fluoro or a C_{1-4}alkoxy group optionally substituted by one or more fluoro, a group NR^aR^b in which R^a and R^b independently represent H or a C_{1-4} alkyl group or R^a and R^b together with the nitrogen atom to which they are attached represent a saturated 3 to 7 membered heterocyclic ring optionally including an O, a group $CONR^cR^d$ in which R^c and R^d independently represent H or a C_{1-4}alkyl group or R^c and R^d together with the nitrogen atom to which they are attached represent a saturated 3 to 7 membered heterocyclic ring;

R^3 represents H or a C_{1-4} alkyl group;

L^1 represents a $(CH_2)_pC_{3-10}$ cycloalkyl group in which p is 0 or1 and in which the cycloalkyl group may be monocyclic or bicyclic and optionally may be bridged provided that the two nitrogens bearing R^3 and R^4, respectively, are not linked to the same carbon atom, and wherein one of the carbons may be replaced by O; with the proviso that L^1 does not represent 1,3-cyclopentyl or 1,4-cyclohexyl;

R^4 represents H or a C_{1-4} alkyl group optionally substituted by one or more of the following: fluoro or C_{1-4} alkoxy optionally substituted by one or more fluoro;

L^2 represents an alkylene chain $(CH_2)_s$ in which s represents 1, 2 or 3 wherein the alkylene chain is optionally substituted by one or more of the following: fluoro or C_{1-4} alkyl;

L^2 may also represent a 5-6 membered carbocyclic 5-6 membered ring fused to R^5;

R^5 represents phenyl or naphthyl or a heterocyclic group selected from thienyl, furyl, pyridyl, pyrrolyl, quinolinyl, indolyl, benzofuranyl, benzo[*b*]thienyl, imidazolyl, benzimidazolyl, thiazolyl, thiadiazolyl, pyrimidinyl, pyrazolyl, oxazolyl, imidazo[1,2-*a*]pyridinyl, 5*H*-pyrrolo[2,3-*b*]pyrazinyl, 1*H*-pyrrolo[3,2-*c*]pyridinyl, 1*H*-pyrrolo[2,3-*c*]pyridinyl, 1*H*-pyrrolo[2,3-*b*]pyridinyl, *1H*-indazolyl, wherein each R^5 is optionally substituted by one or more of the following: a) cyano, b) halo, c) a C_{1-4} alkyl group optionally substituted by one or more fluoro, d) a C_{1-4} alkoxy group optionally substituted by one or more fluoro, e) a group $S(O)_aR^y$ in which a is 0, 1 or 2 and R^y is phenyl optionally substituted by cyano, halo, a C_{1-4}alkyl group optionally substituted by one or more fluoro or a C_{1-4}alkoxy group optionally substituted by one or more fluoro, f) or by a group $(CH_2)_zR^z$ in which z and w is 0 or 1 and R^z represents phenyl or a heterocyclic group selected from thienyl, pyridyl, thiazolyl, pyrazolyl, wherein each R^z is optionally substituted by one or more of the following:cyano, halo, a C_{1-4} alkyl group optionally substituted by one or more fluoro, or a C_{1-4}alkoxy group optionally substituted by one or more fluoro; as well as optical isomers and racemates thereof as well as pharmaceutically acceptable salts, thereof.

2. A compound as claimed in claim1 in which

R^1 represents cyano or a C_{1-4} alkoxy group optionally substituted by one or more fluoro, a C_{1-4} alkyl group optionally substituted by one or more fluoro, halo, a group NR^aR^b in which R^a and R^b independently represent H or a C_{1-4}alkyl group or R^a and R^b together with the nitrogen atom to which they are attached represent a saturated 3 to 7 membered heterocyclic ring optionally including an O, a group $CONR^cR^d$ in which R^c and R^d independently represent H or a C_{1-4}alkyl group or R^c and R^d together with the nitrogen atom to which they are attached represent a saturated 3 to 7 membered heterocyclic ring, n represents 0, 1, 2 or 3 ;

R^2 represents H or cyano or a C_{1-4}alkyl group optionally substituted by one or more fluoro or a C_{1-4}alkoxy group optionally substituted by one or more fluoro, a group NR^aR^b in which R^a and R^b independently represent H or a C_{1-4} alkyl group or R^a and R^b together with the nitrogen atom to which they are attached represent a saturated 3 to 7 membered heterocyclic ring optionally including an O, a group $CONR^cR^d$ in which R^c and R^d independently represent H or a C_{1-4}alkyl group or R^c and R^d together with the nitrogen atom to which they are attached represent a saturated 3 to 7 membered heterocyclic ring;

R^3 represents H or a C_{1-4} alkyl group;

L^1 represents a $(CH_2)_pC_{5-6}$ cycloalkyl group in which p is 0 or 1 and provided that there are 3 carbon atoms between the two nitrogens bearing R^3 and R^4, respectively, wherein one of the carbons of the cycloalkyl group may be replaced by O;

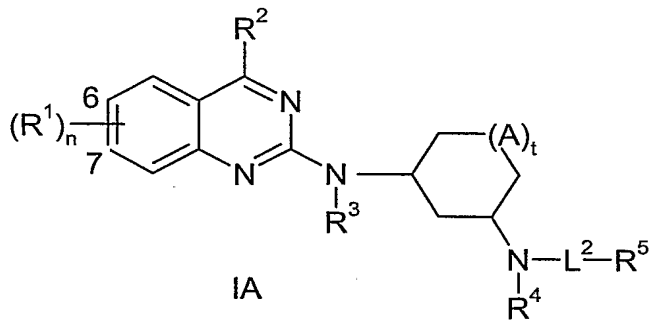
R^4 represents H or a C_{1-4} alkyl group optionally substituted by one or more of the following: fluoro or C_{1-4} alkoxy optionally substituted by fluoro;

L^2 represents an alkylene chain $(CH_2)_s$ in which s represents 1, 2 or 3 wherein the alkylene chain is optionally substituted by one or more of the following: fluoro or C_{1-4} alkyl;

L^2 may also represent a 5-6 membered carbocyclic 5-6 membered ring fused to R^5;

R^5 represents aryl or a heterocyclic group selected from thienyl, furyl, pyridyl, pyrrolyl, quinolinyl, indolyl, benzofuranyl, benzo[*b*]thienyl, imidazolyl, benzimidazolyl, thiazolyl, thiadiazolyl, pyrimidinyl, pyrazolyl, oxazolyl, imidazo[1,2-*a*]pyridine, 5*H*-pyrrolo[2,3-*b*]pyrazine, 1*H*-pyrrolo[3,2-*c*]pyridine, 1*H*-pyrrolo[2,3-*c*]pyridine, 1*H*-pyrrolo[2,3-*b*]pyridine, *1H*-indazole each of which is optionally substituted by one or more of the following: cyano, halo, a C_{1-4} alkyl group optionally substituted by one or more fluoro, a C_{1-4} alkoxy group optionally substituted by one or more fluoro, or a group $(CH_2)_zR^z$ in which z is 0 or 1 and R^z represents phenyl or a heterocyclic group selected from thienyl, pyridyl, thiazolyl, pyrazolyl, wherein each R^z is optionally substituted by one or more cyano, halo, a C_{1-4} alkyl group optionally substituted by one or more fluoro, a C_{1-4}alkoxy group optionally substituted by one or more fluoro or by a group $S(O)_aR^y$ in which a is 0, 1 or 2 and R^y is phenyl optionally substituted by cyano, halo, a C_{1-4}alkyl group optionally substituted by one or more fluoro or a C_{1-4}alkoxy group optionally substituted by one or more fluoro, as well as optical isomers and racemates thereof as well as pharmaceutically acceptable salts, thereof.

3. A compound according to claim 1 or claim 2 of formula IA



IA

in which

R^1 represents chloro, fluoro, methoxy or a group NR^aR^b in which R^a and R^b independently represent a C_{1-4}alkyl group or R^a and R^b together with the nitrogen atom to which they are attached represent a saturated 3 to 7 membered heterocyclic ring optionally including an O;

n represents 0 or 1, and when n=1 the substituent is attached to either position 6 or 7

R^2 represents H or cyano or a C_{1-4}alkyl group, a C_{1-4}alkoxy group optionally substituted by one or more fluoro, a group NR^aR^b in which R^a and R^b independently represent H or a C_{1-4}alkyl group or R^a and R^b together with the nitrogen atom to which they are attached represent a saturated 3 to 7 membered heterocyclic ring optionally including an O, a group $CONR^cR^d$ in which R^c and R^d independently represent H or a C_{1-4}alkyl group or R^c and R^d together with the nitrogen atom to which they are attached represent a saturated 3 to 7 membered heterocyclic ring;

m represents 0 or 1;R^3 represents H;

A represents CH_2 and t is 1;

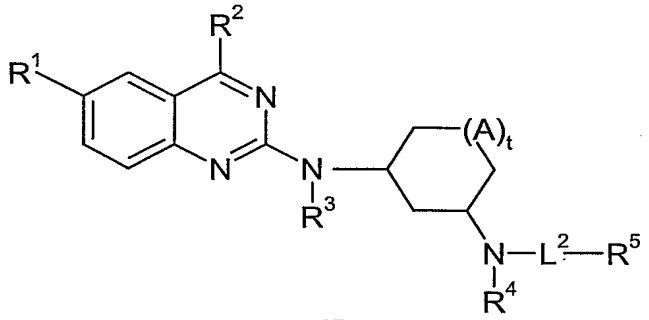
R^4 represents H;

L^2 represents CH_2, $C(CH_3)_2$ or CF_2; and

R^5 represents aryl or a heterocyclic group selected from thienyl, furyl, pyridyl, pyrrolyl, quinolinyl, indolyl, benzofuranyl, benzo[*b*]thienyl, imidazolyl, benzimidazolyl, thiazolyl, thiadiazolyl, pyrimidinyl, pyrazolyl, oxazolyl, imidazo[1,2-*a*]pyridine, 5*H*-pyrrolo[2,3-*b*]pyrazine, 1*H*-pyrrolo[3,2-*c*]pyridine, 1*H*-pyrrolo[2,3-*c*]pyridine, 1*H*-pyrrolo[2,3-*b*]pyridine, *1H*-indazole each of which is optionally substituted by one or more of the following: cyano, halo, a C_{1-4} alkyl group optionally substituted by one or more fluoro, a C_{1-4} alkoxy group optionally substituted by one or more fluoro, or by a group $S(O)_aR^y$ in which a is 0, 1 or 2 and R^y is phenyl optionally substituted by cyano, halo, a C_{1-4}alkyl group optionally substituted by one or more fluoro or a C_{1-4}alkoxy group optionally

substituted by one or more fluoro, or a group ($CH_2)_zR^z$ in which z is 0 or 1 and R^z represents phenyl or a heterocyclic group selected from thienyl, pyridyl, thiazolyl, pyrazolyl, wherein each R^z is optionally substituted by one or more cyano, halo, a C_{1-4} alkyl group optionally substituted by one or more fluoro, a C_{1-4}alkoxy group optionally substituted by one or more fluoro as well as optical isomers and racemates thereof as well as pharmaceutically acceptable salts thereof.

4. A compound according to any previous claim of formula IB



IB

in which

R^1 represents H, cyano, methoxy, isopropoxy, dimethylamino, chloro or fluoro;

R^2 represents H, cyano, a C_{1-4}alkyl group optionally substituted by one or more fluoro or a C_{1-4} alkoxy group optionally substituted by one or more fluoro, a group NR^aR^b in which R^a and R^b independently represent H or a C_{1-4}alkyl group or R^a and R^b together with the nitrogen atom to which they are attached represent a saturated 3 to 7 membered heterocyclic ring optionally including an O, R^3 represents H;

A represents CH_2 and t is 1;

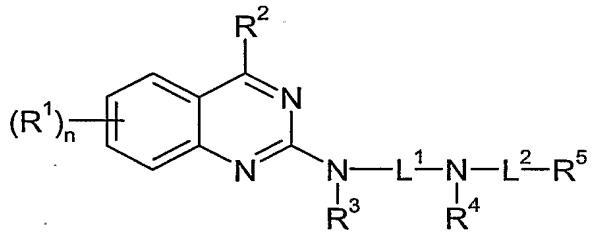
R^4 represents H;

L^2 represents CH_2, $C(CH_3)_2$ or CF_2; and

R^5 represents aryl or a heterocyclic group selected from thienyl, furyl, pyridyl, pyrrolyl, quinolinyl, indolyl, benzofuranyl, benzo[*b*]thienyl, imidazolyl, benzimidazolyl, thiazolyl, thiadiazolyl, pyrimidinyl, pyrazolyl, oxazolyl, imidazo[1,2-*a*]pyridine, 5*H*-pyrrolo[2,3-*b*]pyrazine, 1*H*-pyrrolo[3,2-*c*]pyridine, 1*H*-pyrrolo[2,3-*c*]pyridine, 1*H*-pyrrolo[2,3-*b*]pyridine, *1H*-indazole each of which is optionally substituted by one or more of the following: cyano, halo, a C_{1-4} alkyl group optionally substituted by one or more fluoro, a C_{1-4} alkoxy group optionally substituted by one or more fluoro, or by a group $S(O)_aR^y$ in which a is 0, 1 or 2 and R^y is phenyl optionally substituted by cyano, halo, a C_{1-4}alkyl

group optionally substituted by one or more fluoro or a C_{1-4}alkoxy group optionally substituted by one or more fluoro, or a group $(CH_2)_zR^z$ in which z is 0 or 1 and R^z represents phenyl or a heterocyclic group selected from thienyl, pyridyl, thiazolyl, pyrazolyl, wherein each R^z is optionally substituted by one or more cyano, halo, a C_{1-4} alkyl group optionally substituted by one or more fluoro, a C_{1-4}alkoxy group optionally substituted by one or more fluoro as well as optical isomers and racemates thereof as well as pharmaceutically acceptable salts thereof.

5. A compound as claimed in claim 1 as represented by formula IC



IC

in which R^1 represents cyano or a C_{1-4} alkoxy group optionally substituted by one or more fluoro, a C_{1-4} alkyl group optionally substituted by one or more fluoro, halo, a group NR^aR^b in which R^a and R^b independently represent H or a C_{1-4}alkyl group or R^a and R^b together with the nitrogen atom to which they are attached represent a saturated 3 to 7 membered heterocyclic ring optionally including an O, a group $CONR^cR^d$ in which R^c and R^d independently represent H or a C_{1-4}alkyl group or R^c and R^d together with the nitrogen atom to which they are attached represent a saturated 3 to 7 membered heterocyclic ring, n represents 0, 1, 2 or 3 ;

R^2 represents H, cyano, a C_{1-4}alkyl group optionally substituted by one or more fluoro or a C_{1-4}alkoxy group optionally substituted by one or more fluoro, a group NR^aR^b in which R^a and R^b independently represent H or a C_{1-4} alkyl group or R^a and R^b together with the nitrogen atom to which they are attached represent a saturated 3 to 7 membered heterocyclic ring optionally including an O, a group $CONR^cR^d$ in which R^c and R^d independently represent H or a C_{1-4}alkyl group or R^c and R^d together with the nitrogen atom to which they are attached represent a saturated 3 to 7 membered heterocyclic ring;

R^3 represents H or a C_{1-4} alkyl group;

L^1 represents a $(CH_2)_pC_{7-10}$ cycloalkyl group in which p is 0 or 1 and in which the cycloalkyl group is fused bicyclic or bridged bicyclic provided that the two nitrogens bearing R^3 and R^4, respectively, are not linked to the same carbon atom, and wherein one of the carbons may be replaced by O;

R^4 represents H or a C_{1-4} alkyl group optionally substituted by one or more of the following: fluoro or C_{1-4} alkoxy, optionally substituted by one or more fluoro;

L^2 represents an alkylene chain $(CH_2)_s$ in which s represents 1, 2 or 3 wherein the alkylene chain is optionally substituted by one or more of the following: fluoro or C_{1-4} alkyl;

or L^2 may also represent a 5-6 membered carbocyclic ring fused to R^5,

R^5 represents aryl or a heterocyclic group selected from thienyl, furyl, pyridyl, pyrrolyl, quinolinyl, indolyl, benzofuranyl, benzo[*b*]thienyl, imidazolyl, benzimidazolyl, thiazolyl, thiadiazolyl, pyrimidinyl, pyrazolyl, oxazolyl, imidazo[1,2-*a*]pyridine, 5*H*-pyrrolo[2,3-*b*]pyrazine, 1*H*-pyrrolo[3,2-*c*]pyridine, 1*H*-pyrrolo[2,3-*c*]pyridine, 1*H*-pyrrolo[2,3-*b*]pyridine, *1H*-indazole each of which is optionally substituted by one or more of the following: cyano, halo, a C_{1-4} alkyl group optionally substituted by one or more fluoro, a C_{1-4} alkoxy group optionally substituted by one or more fluoro, or by a group $S(O)_aR^y$ in which a is 0, 1 or 2 and R^y is phenyl optionally substituted by cyano, halo, a C_{1-4}alkyl group optionally substituted by one or more fluoro or a C_{1-4}alkoxy group optionally substituted by one or more fluoro, or a group $(CH_2)_zR^z$ in which z is 0 or and R^z represents phenyl or a heterocyclic group selected from thienyl, pyridyl, thiazolyl, pyrazolyl, wherein each R^z is optionally substituted by one or more cyano, halo, a C_{1-4} alkyl group optionally substituted by one or more fluoro, a C_{1-4}alkoxy group optionally substituted by one or more fluoro as well as optical isomers and racemates thereof as well as pharmaceutically acceptable salts thereof..

6. A compound as claimed in any one of claims 1 to 4 in which p is 0 and L^1 is 1,3-cyclohexyl.

7. A compound as claimed in any one of claims 1 to 6 in which the two nitrogen atoms are in a trans orientation on the cycloalkyl ring.

8. A compound as claimed in claim 7 wherein the stereochemistry of the cycloalkyl carbon atoms to which the nitrogen atoms are attached is S, S.

9. One or more of the following compounds:

N-(4-methylquinazolin-2-yl)-*N'*-(3-thienylmethyl)-*trans*- cyclohexane-1,3-diamine;
N^4,N^4-dimethyl-N^2-{-3-[(3-thienylmethyl)amino]-*trans*-cyclohexyl}quinazoline-2,4-diamine;
N^2-{-3-[(1-benzothien-3-ylmethyl)amino]-*trans*-cyclohexyl}-N^4,N^4-dimethylquinazoline-2,4-diamine;
N^4,N^4-dimethyl-N^2-(-3-{[(1-methyl-1*H*-indol-3-yl)methyl]amino}-*trans*-cyclohexyl)quinazoline-2,4-diamine,
N^4, N^4-dimethyl-N^2 -((1S,3S)-3-{[2-(trifluoromethoxy)benzyl]amino}cyclohexyl)-quinazoline-2,4-diamine;
N^4, N^4-dimethyl-N^2 -[(1S,3S)-3-({[6-(trifluoromethyl)pyridin-3-yl]methyl}amino)-cyclohexyl]quinazoline-2,4-diamine; and
N^2-{(1S,3S)-3-[(3,4-dichlorobenzyl)amino]cyclohexyl}-N^4-N^4-dimethylquinazoline-2,4-diamine;
and pharmaceutically acceptable salts thereof.

10. A compound of formula I as claimed in any previous claim for use as a medicament.

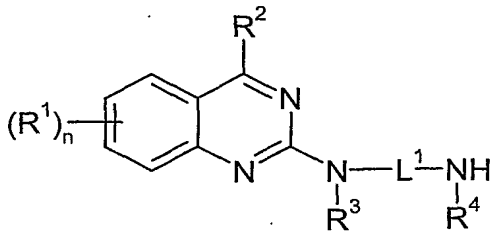
11. A pharmaceutical formulation comprising a compound of formula I, as defined in any one of claims 1 to 9 and a pharmaceutically acceptable adjuvant, diluent or carrier.

12. Use of a compound of formula I, as defined in any one of claims 1 to 9 in the preparation of a medicament for the treatment or prophylaxis of conditions associated with obesity.

13. A method of treating obesity, psychiatric disorders, anxiety, anxio-depressive disorders, depression, bipolar disorder, ADHD, cognitive disorders, memory disorders, schizophrenia, epilepsy, and related conditions, and neurological disorders and pain related disorders , comprising administering a pharmacologically effective amount of a compound as claimed in any one of claims 1 to 9 to a patient in need thereof.

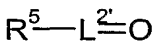
14. A compound as defined in any one of claims 1 to 9 for use in the treatment of obesity.

15. A process for the preparation of compounds of formula I as claimed in claim 1 comprising reacting a compound of formula II



II

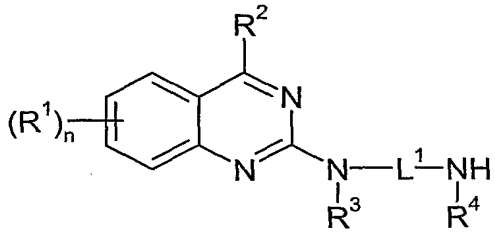
in which R^1, R^2, R^3, R^4, L^1, n and m are as previously defined in claim 1 with a compound of formula III



III

in which R^5 is as previously defined and $L^{2'}$ represents a group which after reaction of compounds II and III gives L^2 on reduction, under reductive alkylation conditions.

16. Intermediates of formula II



II

in which R^1, R^2, R^3, R^4, L^1, n and m are as defined in claim 1.

17. A method of treating obesity, type II diabetes, Metabolic syndrome and prevention of type II diabetes comprising administering a pharmacologically effective amount of a compound as claimed in any one of claims 1 to 9 to a patient in need thereof.